

REMARKSI. Introduction

In response to the Office Action dated June 24, 2005, claim 1 has been amended. Claims 1-19 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Claim Amendments

Applicants' attorney has made amendments to the claims as indicated above. These amendments were made solely for the purpose of clarifying the language of the claims, and were not required for patentability or to distinguish the claims over the prior art.

III. Restriction Requirement

On pages (1)-(4) of the Office Action, the claims were restricted into the following claim groups, which are alleged to be different "species" of the same "genus" invention:

- I. Claims 1-7,
- II. Claims 8-14, and
- III. Claims 15-19.

During a telephone conversation on June 14, 2005, Applicants' attorney provisionally elected Group I, namely claims 1-7.

Applicants' attorney now confirms the election of Group I, namely claims 1-7. However, Applicants' attorney does with traverse.

Applicants' attorney notes that there has been no showing that the allegedly different species are classified differently, and asserts that a search into prior art with regard to the inventions of the different Groups is so related that separate significant search efforts are not necessary. Accordingly, there is no serious burden on the Examiner to collectively examine the different claim Groups. Therefore, restriction is not proper and should be withdrawn.

IV. Non-Art Rejections

On page (4) of the Office Action, claim 1 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants' attorney has amended claim 1 to overcome this rejection.

V. Prior Art Rejections

A. The Office Action Rejections

On pages (5)-(8) of the Office Action, claims 1, 4-5, and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Maleki et al., U.S. Publication No. 2002/0018611 (Maleki). However, on pages (4)-(5) of the Office Action, claims 2, 3, and 6 were indicated as being allowable if rewritten in independent form to include the base claim and any intervening claims.

Applicants' attorney acknowledges the indication of allowable claims, but respectfully traverses the remaining rejections in light of the arguments below.

B. Applicants' Independent Claim

Applicants' independent claim 1 is directed to a monolithic wavelength converter assembly using a common layer structure comprising: a widely-tunable laser, traveling-wave photodetector (TWPD) and traveling-wave modulator (TWM), wherein an input signal on a first lightwave with a first wavelength creates an electrical signal in the TWPD that propagates along a first interconnecting electrical transmission line to the TWM, where the electrical signal is imprinted onto a second lightwave with a second selectable wavelength derived from the widely-tunable laser, and the electrical signal continues to propagate along a second interconnecting electrical transmission line to a load resistance,  $R_L$ .

C. The Maleki Reference

Maleki describes devices based on a non-spherical whispering-gallery-mode optical resonator.

D. Applicants' Claimed Invention Is Patentable Over The References

Applicants' attorney respectfully submits that the cited references do not teach or suggest these various elements of Applicants' independent claim 1.

The Office Action, on the other hand, asserts that Maleki teaches a wavelength converter using a common layer structure and including a widely tunable laser, optical wave photodetector and modulator, and one input wavelength is detected and the electrical signal modulates a second lightwave. However, none of these elements are found in Maleki.

Instead, Maleki merely describes high Q resonators that can be used as filters in optoelectronic oscillators (OEOs). These OEOs generate stable tunable radio frequency (RF) signals from externally-modulated, highly-stabilized, continuous wave (CW) lasers.

For example, there is no teaching or suggestion in Maleki of wavelength conversion that detects an input signal on a first lightwave with a first wavelength, which creates an electrical signal in the traveling wave photodetector (TWPD) that propagates along a first interconnecting electrical transmission line to the traveling wave modulator (TWM), where the electrical signal is imprinted onto a second lightwave with a second selectable wavelength derived from the widely-tunable laser, and the electrical signal continues to propagate along a second interconnecting electrical transmission line to a load resistance,  $R_L$ . Indeed, there is no mention of traveling-wave approaches or termination resistors in Maleki.

In another example, there is no input optical signal in Maleki, and the OEO of Maleki generates a CW RF signal that has no data on it. Moreover, the OEO feedback loop of Maleki merely receives the optical output from the modulator and converts it into an electrical signal in order to control the modulator. However, this electrical signal of Maleki is not detected from a first lightwave and then imprinted onto a second lightwave. Indeed, there is no second lightwave in Maleki.

In yet another example, there is no integrated widely tunable laser in Maleki. Instead, laser 530 of Maleki is a discrete CW laser that may be tunable by mechanically adjusting its cavity length, but it needs to have a very long cavity for stability as shown in the embodiment illustrated in FIG. 5b, which uses a fiber-loop cavity.

In still another example, there is no common layer structure for the circuit in Maleki. Instead, Maleki merely states that the optical coupling with the resonator may be implemented with waveguides or fibers for integration with other fiber optical elements or integrated electro-optical circuits formed on substrates.

Thus, the Maleki reference does not teach or suggest Applicants' claimed invention. Moreover, the various elements of Applicant's claimed invention together provide operational advantages over the reference. In addition, Applicant's invention solves problems not recognized by the references.

With regard to Tanaka, which was cited by the Office Action as teaching at least claim 1, but which was not used as the basis for a rejection, Applicants' attorney respectfully traverses this assertion. Tanaka does not describe a monolithic integrated wavelength converter, but a system

comprised of a control unit and an optical processing unit that incorporates optical filtering to select an input wavelength. No integrated widely tunable laser is suggested by Tanaka. In addition, no traveling-wave photodetector or modulator is suggested by Tanaka.

Thus, Applicants' attorney submits that independent claim 1 is allowable over the references. Further, dependent claims 2-7 are submitted to be allowable over the references in the same manner, because they are dependent on independent claim 1, and thus contain all the limitations of the independent claim. In addition, dependent claims 2-7 recite additional novel elements not shown by the references.

VI. Conclusion

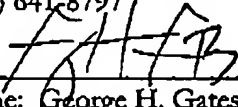
In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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